

VALVE INTEGRALLY ASSOCIATED WITH  
MICROFLUIDIC LIQUID TRANSPORT ASSEMBLY

## CROSS-REFERENCE TO RELATED APPLICATIONS

- This application is a divisional of U.S. Patent Application No. PAT. No. 6,608,454
- 5 10/001,246 filed November 1, 2001, now ~~allowed~~, which claims the benefit under 37 USC 119(e) of U.S. Provisional Application No. 60/245,865, filed November 2, 2000, which applications are incorporated herein by reference in their entirety.

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## BACKGROUND OF THE INVENTION

Field of the Invention

- 10 The present invention relates to valves associated with microfluidic assemblies, and more specifically, to valves integrally associated with microfluidic assemblies adapted to transport liquid samples for analytical purposes.

Description of the Prior Art

- 15 A variety of analytical instruments are used to characterize liquid samples containing an analyte of interest, particularly in the context of assays directed to real-time detection of biomolecular interactions. For example, the study of real-time biomolecular interactions through use of "biosensors" are now of fundamental importance in many fields, including biology, immunology and pharmacology. In this context, many biosensor-based analytical instruments include "microfluidic structures"
- 20 adapted to transport one or more liquid samples through an interaction or a detection zone. Such microfluidic structures generally include a block unit that has multiple internal channels, inlet and outlet ports, pumps and valves; all of which operate in concert to flow small volumes of liquid sample and various other buffers and reagents through one or more interaction and/or detection zones.

- 25 An exemplary microfluidic structure for such liquid handling may be illustrated in the context of biosensors that use surface plasmon resonance (SPR) to monitor the interactions between an analyte and a ligand bound to a solid support. In